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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/476,092	01/03/2000	DAVID F. SORRELLS	1744.0250001	7304
26111	7590	10/18/2004	EXAMINER	
STERNE, KESSLER, GOLDSTEIN & FOX PLLC 1100 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			MEHRPOUR, NAGHMEH	
			ART UNIT	PAPER NUMBER
			2686	

DATE MAILED: 10/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Interview Summary	Application No. 09/476,092	Applicant(s) SORRELLS ET AL.	
	Examiner Naghmeh Mehrpour	Art Unit 2686	

All participants (applicant, applicant's representative, PTO personnel):

(1) Naghmeh Mehrpour.

(3) Michelle Holoubele.

(2) Jeff Helrcy.

(4) _____.

Date of Interview: _____.

Type: a) ☐ Telephonic b) ☐ Video Conference
c) ☐ Personal [copy given to: 1) ☐ applicant 2) ☒ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☐ No.

If Yes, brief description: _____.

Claim(s) discussed: _____.

Identification of prior art discussed: _____.

Agreement with respect to the claims f) ☐ was reached. g) ☐ was not reached. h) ☒ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: The agreement was reached that by amending the independent claims 1, 6, rejection by Pardoen will be over come, in addition independet claim 19, will over come the rejection without any amendment.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.


Examiner's signature, if required

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

1. A method for down-converting a frequency modulated (FM) signal, comprising the steps of:
 - (1) aliasing the FM signal at an aliasing rate, said aliasing rate being determined by the frequency of the FM signal;
 - (2) adjusting said aliasing rate to compensate for frequency changes of the FM signal; and
 - (3) outputting, responsive to steps (1) and (2), a demodulated baseband information signal.
2. The method of claim 1, wherein step (1) comprises:
aliasing the FM signal at an aliasing rate that is substantially equal to a sub-harmonic of a frequency of the FM signal.
3. The method of claim 1, wherein step (1) comprises:
aliasing the FM signal at an aliasing rate that is substantially equal to a frequency of the FM signal.
4. The method of claim 1, further comprising the step of:
compensating for phase delays to maintain bandwidth and stability.
5. The method of claim 1, wherein the FM signal has a frequency substantially equal to a Family Radio Service frequency.
6. A method for directly down-converting a frequency modulated (FM) signal having a carrier frequency, comprising the steps of:
 - (1) aliasing the FM signal with a first local oscillator (LO) signal to create a first down-converted signal, said first LO signal having a first LO frequency and a first LO phase;
 - (2) aliasing the FM signal with a second LO signal to create a second down-converted signal, said second LO signal having a second LO frequency and a second LO phase, wherein said second LO frequency is substantially the same as

said first LO frequency, and wherein said second LO phase is shifted relative to said first LO phase;

- (3) combining said first down-converted signal and said second down-converted signal to create a summation signal;
- (4) integrating said summation signal to create a control signal;
- (5) creating an aliasing signal from said control signal; and
- (6) outputting, responsive to steps (1)-(5), a demodulated baseband information signal.

7. The method of claim 6, wherein said second LO phase is shifted relative to said first LO phase by an amount that is substantially equal to one-quarter period of the FM signal.

8. The method of claim 6, wherein said second LO phase is shifted relative to said first LO phase by an amount that is substantially equal to any multiple of a period of the FM signal plus one-quarter period of the FM signal.

9. The method of claim 6, wherein step (5) comprises:

- (a) compensating for phase delays to maintain stability by adjusting said control signal to create a compensated control signal; and
- (b) creating said aliasing signal using said compensated control signal.

10. The method of claim 6, wherein said aliasing signal is substantially equal to a sub-harmonic of the carrier frequency of the FM signal.

11. The method of claim 6, wherein said aliasing signal is substantially equal to the carrier frequency of the FM signal.

12. A system for down-converting a frequency modulated (FM) signal having a carrier frequency, comprising:

a first aliasing module to alias the FM signal with a first local oscillating (LO) signal, said first LO signal having a first LO signal frequency and a first LO signal phase, said first LO

signal frequency being a function of an aliasing rate, and said first aliasing module outputting a first down-converted signal;

a second aliasing module to alias the FM signal with a second LO signal, said second LO signal having a second LO signal frequency and a second LO signal phase, wherein said second LO signal frequency is substantially equal to said first LO signal frequency and said second LO signal phase is shifted relative to said first LO signal phase, said second aliasing module outputting a second down-converted signal;

a summing module to combine said first down-converted signal and said second down-converted signal to create a summation signal;

an integration module to integrate said summation signal and create a control signal;

a voltage controlled oscillator to accept said control signal and to output an aliasing signal, wherein said aliasing signal determines said aliasing rate; and

wherein said control signal is a demodulated baseband information signal.

13. The system of claim 12, wherein said aliasing rate is determined by the carrier frequency of the FM signal.

14. The system of claim 13, wherein said aliasing rate is substantially equal to a sub-harmonic of the carrier frequency of the FM signal.

15. The system of claim 13, wherein said aliasing rate is substantially equal to the carrier frequency of the FM signal.

16. The system of claim 12, further comprising a compensation module that accepts said control signal and that outputs a compensated control signal, and wherein said voltage controlled oscillator accepts said compensated control signal.

17. The system of claim 16, wherein said compensation module compensates for phase delays to maintain bandwidth and stability.

18 The system of claim 12, wherein the carrier frequency of the FM signal is at a frequency substantially equal to a Family Radio Service frequency.

19. A method for down-converting a frequency modulated (FM) signal, comprising the steps of:

- (1) aliasing the FM signal with a first local oscillator (LO) signal to create a first down-converted signal;
- (2) aliasing the FM signal with a second LO signal to create a second down-converted signal;
- (3) generating a control signal from said first and second down-converted signals, wherein said first and second LO signals are generated from said control signal; and
- (4) adjusting said control signal based on frequency changes of the FM signal.

20. The method of claim 19, wherein step (3) comprises the step of:

- (a) summing said first and second down-converted signals to generate a summation signal; and
- (b) integrating said summation signal to generate said control signal wherein said first and second LO signals are generated from said control signal.

21. The method of claim 20, wherein step (4) comprises the step of:

adjusting said control signal to maintain said summation signal at a value substantially equal to zero.

22. The method of claim 19, further comprising the step of:

maintaining said first and second LO signals such that one of said first and second LO signals leads the FM signal, and another of said first and second LO signals lags the FM signal.

23. A down-converter, comprising:

- a first aliasing module;
- a second aliasing module; and

a summer coupled to said first and second aliasing modules.

24. The down-converter of claim 23, further comprising:
 - an integrator coupled to said summer;
 - a voltage controlled oscillator (VCO) coupled to said integrator; and
 - a phase shifter coupled to said VCO.
25. The down-converter of claim 24, further comprising:
 - a loop compensation module coupled to said integrator and said voltage controlled oscillator.
26. A down-converter to down-convert a frequency modulated (FM) signal, comprising:
 - a first aliasing module to receive the FM signal and a first local oscillator (LO) signal, wherein said first aliasing module creates a first down-converted signal;
 - a second aliasing module to receive the FM signal and a second LO signal, wherein said second aliasing module creates a second down-converted signal;
 - a tracking module to track changes in frequency of the FM signal; and
 - an LO signal changing module to change said first and second LO signals based on said changes in frequency.
27. The down-converter of claim 26, wherein said tracking module comprises:
 - a summer that sums said first and second down-converted signals to generate a summation signal; and
 - an integrator that integrates said summation signal to generate a control signal.
28. The down-converter of claim 27, wherein said LO signal changing module comprises:
 - a voltage controlled oscillator that modifies said first and second LO signals based on said control signal.